



CS MINING

Incoming
M/001/0067

Peter

May 19, 2015

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Div. of Oil, Gas & Mining

Paul Baker and Peter Brinton
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84116

SUBJECT: Copper Ranch Mini Pit Amendment

Dear Paul and Peter,

Per our ongoing discussions concerning the addition of the Copper Ranch mini pit, CS Mining, LLC (CSM) is formally requesting the Division of Oil, Gas and Mining approve this amendment request. CSM wishes to begin mining operations in the Copper Ranch mini pit, as seen in the attached Figure 1. In support of this request, CSM has provided the following: a narrative description of the plans for mining and handling ore and waste, as well as proposed reclamation activities. Figure 1 shows the mine design, and Figure 2 shows the proposed reclamation treatments. Also included in this submittal are ore characterization, geologic information, hydrologic information, and documentation of surety for the proposed reclamation treatments.

Figure 1 Copper Ranch Mini Pit Mine Design
Figure 2 Copper Ranch Mini Pit Reclamation Plan

Attachment A Hydrologic Information for the Copper Ranch Mini Pit
Attachment B Geologic Information for the Copper Ranch Mini Pit
Attachment C Chemex Results for Acid-Base Accounting and Rock Characterization
Attachment D Surety Information for the Proposed Mining and Reclamation Activities

Sincerely,

David McMullin
President and CEO

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Div. of Oil, Gas & Mining Location and Acreage

The Copper Ranch mini pit is located on the southwest flank of the Copper Ranch knoll (Figure 1). Disturbance related to the Copper Ranch mini pit include mining of the open pit, and a slight haul road re-alignment. Total disturbance anticipated for mining activities related to the Copper Ranch mini pit and haul road re-alignment is 15.55 acres, 4.55 acres of disturbance will occur on private land, and 11 acres of disturbance will occur on BLM land (Figure 1). An additional 50 feet of disturbance from the pit edge is also included in this acreage calculation. This disturbance includes a berm to be built along the perimeter of the open pit.

Topsoil Salvaging and Plans to Protect Soils

The area proposed for disturbance has been previously disturbed by exploration activities, and although the ground has been ripped and re-seeded, there are many areas where little to no desirable vegetation is located on the proposed pit footprint. Because of this, it is difficult to determine how much topsoil will be able to be salvaged during initial stripping. Any topsoil salvaged during initial stripping of the proposed disturbance area will be hauled to the existing SITLA ore transfer station topsoil stockpile located southwest of the Copper Ranch mini pit.

COPPER RANCH MINE COMPLEX & RELATED HAULAGE ROADS		
Total Cubic Yards	Location	Notes
12,544	Copper Ranch Mini Pit and Haul Road Realignment (topsoil to be stored in the SITLA topsoil stockpile)	This represents the calculated amount of topsoil to be salvaged during disturbance related to the Copper Ranch mini pit and haul road realignment. New disturbance is 15.55 acres. Areas previously disturbed during exploration activities are anticipated to yield <3 inches of recoverable topsoil. Areas along the hillside are also anticipated to yield <3 inches of recoverable topsoil. The areas in the flats are anticipated to yield 12 inches of recoverable topsoil. So an overall average of 6 inches of recoverable topsoil was used for these calculations.

Although information on the National Resources Conservation Service (NRCS) online web soil survey does not extend over the entire Copper Ranch area, surveys in the immediate proximity (within 300 feet of the proposed disturbance) identify the soil as Dixie-Garbo complex, 3 to 8 percent slopes (NRCS 2015). The soil in this area is primarily gravelly loam to very gravelly clay loam. Vegetation is dominated by sagebrush. The soil and vegetation type found within the Copper Ranch Complex is similar to other areas within the Milford Operations Area (MOA). Plans for protecting the soil are similar to what is stated in the NOI, and included stockpiling in topsoil stockpile areas with berms along the base to prevent loss of sediments due to erosion, and interim seeding of topsoil stockpiles.

Design, Depth to Ground Water, and Mine Plan

The Copper Ranch mini pit will be designed with 45 degree slopes, and a maximum depth of 5340 feet above mean sea level (amsl). Exploration drilling performed by CSM

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in the vicinity of the Copper Ranch mini pit encountered water at elevations starting at 5048 ft amsl, which is 292 feet below the currently proposed pit floor. The amount of water encountered starting at 5048 ft amsl was approximately 5 gallons per minute (gpm) (Attachment A).

Mining of the Copper Ranch mini pit will be performed by 60- and 100-ton haul trucks, which will be loaded via loader or excavator. The Copper Ranch mini pit will produce approximately 200,000 tons of copper ore, and 900,000 tons of waste. Ore from the Copper Ranch mini pit will be hauled to the on-site processing facilities, located northwest of the proposed pit. Waste from the Copper Ranch mini pit will be placed in the existing Hidden Treasure waste dump.

Ore and Waste Characterization

The ore and waste in the Copper Ranch deposit have been characterized for elemental composition and acid-base accounting. The waste that will be encountered in the Copper Ranch mini pit is composed of cemented alluvium, extrusive volcanics, marble, and intrusive granite/granodiorite/monzonite. The ore is located in an andradite/marble skarn that occurs along the contact of the extrusive volcanics and the granite/granodiorite/monzonite and marble (Attachment B).

Acid generating potential (AGP) and acid neutralization potential (ANP) for the proposed Copper Ranch mini pit were compiled from exploration drill holes located throughout the Copper Ranch orebody. The pulps from the exploration drill holes were split into various classifications as seen in Table 1 below.

Due to the size and nature of the Copper Ranch deposit, as well as the availability (or lack thereof) of pulps from historic exploration drilling in the direct vicinity of the Copper Ranch mini pit, exploration holes that represent the entire Copper Ranch deposit were used for characterization of the various waste types anticipated to be encountered. Ore characterization was performed using ore pulps remaining from previous drilling activities within the vicinity of the Copper Ranch mini pit.

Table 1: Classification of Rock Type used for Elemental and AGP/ANP Analyses

CHEMEX ID	ROCK TYPE	HOLE ID	SAMPLE INTERVAL
WW-1	OVERBURDEN (CEMENTED ALLUVIUM)	CUR 1	0-20
		CUR 2	15-30
		CUR12	30-45
		CUR 24	45-60
		CUR 130	60-80
WW-2	MARBLE	CUR 1	110-125
		CUR 2	150-165
		CUR12	170-185
		CUR 24	105-120

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		CUR 130	260-270
WW-3	GRANITE/GRANODIORITE	CUR 2	220-245
		CUR 130	310-325
WSE-1	OVERBURDEN (CEMENTED ALLUVIUM)	CUR 104-50	10 TO 20
		CUR 49-50	20-30
		CUR 49-28	0-15
		CUR 50	10 TO 30
		CUR 28	15-25
		CUR 27	40-50
WSE-2	GRANITE/GRANODIORITE	CUR 104-50	30-45
		CUR 50	90-105
		CUR 28	230-245
		CUR 27	80-100
		CUR 68	125-150
WNSP-1	OVERBURDEN (CEMENTED ALLUVIUM)	CUR 46	0-25
		CUR 161	15-30
WNSP-2	MARBLE	CUR 46	140-180
		CUR 161	65-80
WNA-1	OVERBURDEN (CEMENTED ALLUVIUM)	CUR 92	0-25
WNA-3	GRANITE (GRANODIORITE)	CUR 92	260-300
WV-1	VOLCANICS	CUR 92	30-60
		CUR 14-8	0-30
		CUR 14-9	100-125
		CUR 14-10	175-200
WV-2	VOLCANICS	CRR-24	390-405
		CRR-26	300-320
OSP1	ORE SMALL PIT1	CUR-2	45-60
OSP2	ORE SMALL PIT2	CUR-24	70-75
		CUR-27	65-75

Each waste classification, and samples taken from the ore zone, were compiled and sampled for elemental and AGP/ANP characteristics. Compilation of the different waste and ore zones were performed by analyzing the thickness of the rock type throughout the Copper Ranch Complex, and determining an adequate blend of samples to create a relatively representative composite. Depths from surface, as well as interval thickness, are measured based upon vertical holes. Any holes that were drilled at an angle were adjusted accordingly so as to reflect actual depths and thicknesses. Table 2 lists the results of the AGP/ANP testing. Note that AGP is expressed as MPA.

Table 2: Acid Generating and Neutralization Potential – Copper Ranch Deposit

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Analyte	Recvd Wt.	MPA	NP	pH	Ratio (NP:MPA)
	kg	tCaCO ₃ /1Kt	tCaCO ₃ /1Kt	Unity	Unity
WW-1	0.16	1.6	118	8.3	75.52
WW-2	0.17	0.6	714	9.2	1142.5
WW-3	0.18	0.9	557	8.9	594.1
WSE-1	0.16	0.9	158	8.3	168.55
WSE-2	0.16	0.6	53	8.5	84.8
WNSP-1	0.17	0.9	193	8.2	205.9
WNSP-2	0.17	0.6	618	8.4	988.8
WNA-1	0.18	1.9	49	8.3	26.13
WNA-3	0.18	0.6	41	8.6	65.6
WV-1	0.17	0.6	29	8.6	46.4
WV-2	0.17	0.3	37	8.5	118.4
OSP-1 (Ore small pit)	0.18	1.3	170	8.2	136
OSP-2 (Ore small pit)	0.18	0.9	125	8	133.35

Results provided by ALS Minerals Report RE15063410 (Attachment C)

Elemental analyses were performed on the same composite samples for each classification. The analyses included a 32 elemental suite. A summary of the EPA regulated RCRA 8 metals is listed in Table 3 below.

Table 3: Elemental Results for the Copper Ranch Deposit

Metals	Arsenic (ppm)	Barium (ppm)	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Mercury (ppm)	Selenium (ppm)	Silver (ppm)
WW-1	7.4	752	<0.5	70	13	0.006	0.6	<0.5
WW-2	7.1	123.5	<0.5	30	<2	<0.005	0.3	<0.5
WW-3	23.5	288	<0.5	20	6	0.005	0.3	<0.5
WSE-1	92.6	456	0.8	90	12	0.04	0.6	2
WSE-2	33.6	869	<0.5	110	8	0.008	0.2	<0.5
WNSP-1	9	715	<0.5	40	16	0.012	0.3	<0.5
WNSP-2	25	63.6	0.6	30	14	0.008	<0.2	<0.5
WNA-1	9.1	779	<0.5	110	15	0.01	0.8	<0.5
WNA-3	9.3	1090	<0.5	150	30	0.007	0.2	<0.5
WV-1	9.3	1020	<0.5	120	13	0.005	0.5	<0.5
WV-2	9.5	896	<0.5	40	21	0.007	0.3	<0.5
OSP-1	127.5	516	1.5	120	43	0.034	0.8	8
OSP-2	108.5	167.5	1.9	30	41	0.054	1	5.3

Results provided by ALS Minerals Report RE15064309 (Attachment C)

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The results of the elemental analyses, along with the AGP/ANP data for the Copper Ranch deposit demonstrate, for the most part, that the waste rock and ore zones in the proposed pit will be non-deleterious and non-acid-generating, and will have neutralizing potential. Acid rock drainage is therefore not anticipated in either the waste rock dump or pit. The tails from processing the Copper Ranch ore are also anticipated to be non-deleterious and non-acid-generating. This is based off of the ABA and elemental analyses for the Copper Ranch ore (Tables 2 and 3), as well as on-going metallurgical test work performed in-house.

If characterization of ore and waste demonstrate elevated levels of certain metals, or have acid-forming potential, further analyses will be performed in conjunction with mining activities. Waste rock with elevated levels of certain metals, or that have acid-forming potential, will be placed on top of waste rock that has acid-neutralization potential and low levels of certain metals. The 'contaminated' waste material will then be buried by the 'un-contaminated' waste material, so as to encapsulate and minimize any contamination.

Impact Statements

Impacts to soils may include loss of topsoil due to erosion of topsoil stockpiles. This will be minimized by placing berms along the base of the topsoil stockpiles, and applying interim seed mixtures to the stockpiles to promote growth and stabilization.

Impacts to threatened and endangered species are not anticipated due to the large amount of disturbance already within the proposed footprint of the Copper Ranch mini pit as well as the vicinity to the main haulage road. Impacts to wildlife in general will be minimized by implementation of BMPs as set forth in Section 109.6 of the NOI.

Impacts to surface and ground water systems are not anticipated to occur due to the disturbance associated with the Copper Ranch mini pit and haul road re-alignment. As stated above, no ground water is anticipated to be encountered during mining operations. The Copper Ranch mini pit is also not in the vicinity of any drainage systems.

Impacts to slope stability, erosion control, air quality, and public health and safety for the Copper Ranch mini pit are assumed to be the same as what is stated in Section 109.5 of the NOI. Measures to mitigate those impacts will be followed as stated in Section 109.6 of the NOI.

Reclamation Activities

Current and post-mining land use for the Copper Ranch Complex will be the same as for other areas within the MOA. Current land use includes mining activities, and post-mining land use will include open space, wildlife habitat, and livestock grazing.

Upon completion of the Copper Ranch mini pit, CSM proposes to backfill the Copper Ranch mini pit with waste produced from surrounding mining activities, such as the Copper Ranch middle pit, a proposed pit within the Copper Ranch Complex that will be

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submitted to the Division for approval later this year. The Copper Ranch mini pit is anticipated to only stay open for one or two years upon completion of mining activities, at which point it will be backfilled by material from the Copper Ranch middle pit. Once the Copper Ranch mini pit is completely backfilled, the area will be pushed to match existing contour, followed by ripping, 6 inches of topsoil placement (depending upon topsoil availability), and re-seeding using a Division approved seed mix.

In the event that the Copper Ranch mini pit will not be backfilled, reclamation treatments for the pit include ripping and regrading the access road and pit floor, followed by placement of 6 inches of topsoil and seeding using a Division approved seed mixture, as stated in Section 110 of the NOI (Figure 2a).

Flat areas, such as the old haul road and access ramp, will be re-contoured then ripped to a depth of 24 inches and covered by 6 inches of topsoil (depending upon topsoil availability), and re-seeded.

All reclamation activities will occur in the fall, and will follow the same guidelines as stipulated in Section 110 of the NOI. CSM will conduct reclamation as required by the rules and guidelines set forth in the NOI.

Surety

The cost to reclaim the disturbance related to the Copper Ranch mini pit and haul road re-alignment is \$73,000 based upon 2014 RS Means Open Shop, Provo Utah rates. Surety spreadsheets with detailed cost estimates is located in Attachment D.